Post Office Box 6788
Fort Davis Station
Washington, D. C. 20020

REGISTERED

20 NOV 1967

X1 [redacted]

Subject : Request for Quotation No. IC-21-68
Project No. (To be furnished at a later date.)

Gentlemen:

This office has a requirement for production quantities of Twin Light Source Light Tables with Measuring Stage. Your review of the enclosed TECHNICAL SPECIFICATIONS FOR PRODUCTION UNITS OF A TWIN LIGHT SOURCE TABLE WITH MEASURING STAGE is requested and a quotation for fabrication of production quantities of 20, 40, 50, 60 and 75 units is solicited.

Prior to the submission of your quotation if a conference is desired between your technical representatives and the technical representatives of the Government you may arrange for such a conference by

X1 contacting [redacted]

Your quotation, together with delivery schedules for each quantity, should be submitted no later than 2 January 1968 unless a later date is requested of and authorized by [redacted] Two copies of the quotation should be forwarded directly to the Contracting Officer. Three copies should be forwarded to the Technical Representative of the Contracting Officer at the following address:

25X

X1 [redacted]
Post Office Box 8031
Southwest Station
Washington, D. C. 20024

The specifications enclosed herewith may not be duplicated or made use of for any purpose other than the preparation of a quotation in response to this solicitation. The specifications may be considered

Declass Review by NGA.

Subject: Request for Quotation No. IC-21-68

DE-CLASSIFIED when removed from this covering letter which may NOT be de-classified. Government interest may be shown, however, association of this Government activity with this request is classified CONFIDENTIAL. In this connection, knowledge of the identity of the particular Government activity which the undersigned represents must be restricted to the least number of persons possible and then only to those who have been authorized in writing by this activity to have access to classified information. Such identity shall be disclosed only on a verbal basis and shall never appear in writing in any of your documents. Any correspondence initiated by you should not make reference therein to the undersigned. "Secrecy Agreements" should be signed by any individual in your company who will have knowledge of this request.

If it is desired to proceed with this contemplated program with your company, the authorization will be effected by the issuance of the appropriate type of Government Contract.

At the time of submitting the requested quotation(s) please return this letter, together with all enclosures, to the undersigned at the address stipulated above, Attention: [redacted] If you do not elect to submit a quotation, this letter and all correspondence should also be returned. 25X

Very truly yours,

[redacted] 25X

Contracting Officer

Enclosures:
Specifications, noted above
(2 copies)

Distribution:
Original - Addressee
1 - PD File (RFQ-IC-21-68)
1 - NPIC/Req. Office
3 - NPIC/TDS
1 - NPIC Chrono

X1 LB/SS/NPIC [redacted] (17 Nov 67)

7 November 1967

TECHNICAL SPECIFICATIONS FOR PRODUCTION UNITS OF A TWIN LIGHT SOURCE TABLE WITH MEASURING STAGE

1. INTENT

The purpose of this project is to fabricate a production version of the Twin Light Source Light Table (TLSLT) with a Measuring Stage, which will be utilized with the [redacted] Zoom 70 equipped with the [redacted] Wide Span Rhomboid Attachments or the [redacted] Zoom 240 Microstereoscope. All of the features of the light table must be compatible with the performance characteristics of the above named instruments. The Sponsor will furnish to the Contractor one [redacted] Zoom 70 equipped with the Wide Span Rhomboids for a period of three weeks during the contract.

X1 25X 25X X1

2. MECHANICAL IMPLEMENTATION

The basic concept and general construction of the subject light table will be similar to that prototype instrument developed under US Government Contract [redacted] and generally as outlined in [redacted] Proposal No. SME-CG-58. The following major differences are to be noted:

X1 25X

2.1. Stage Translation - The translation of the scanning stage will exhibit two characteristic types of motion; (1) a precise screw driven type and (2) a free body type.

2.1.1. Precise Measuring Motion - This motion, which is associated with the measuring function, shall be completely smooth and free from "chatter" or non-uniform drag. When viewing through the microstereoscope at any magnification up to 60X the image shall move in a smooth and uniform manner without perceivable "jumping" or "jerking." The smoothness of motion as exhibited on the microscope stage of a [redacted] Dynazoom Microscope or equivalent will be acceptable. Backlash in the screw motion must be reduced to an absolute minimum between the handwheels, the scanning stage, and the counters. In no case shall it exceed 0.00001 ft. There must be no "dead zone" in the handwheel rotation, i.e., screw motion. The measuring range shall be ± 2.0 inches in X and ± 1.5 inches in Y. The measuring counters shall read directly in portions of a foot and the measuring accuracy shall be ± .0001 foot plus 0.1% of the distance travelled.

X1

2.1.2. Free Body Motion - A quick, but positive, mechanically stable disengaging mechanism will be provided to disconnect the stage from the precise measuring screws. This mechanism will allow the operator to quickly and simply lock the stage in the disengaged mode or allow him to simply disengage momentarily for one repositioning operation and upon release the mechanism will automatically lock the stage onto the screw drive mechanism--the engaging-dis-

engaging mechanism on the present prototype is not acceptable because it is neither positive or mechanically stable. When the stage is in the free body mode the stage movement will be that attributed to a free body; that is, a constant force applied along any direction parallel to the plane of the glass stage plate will produce a free body motion of constant velocity diminshed only by a uniform friction component. Motion along any vectorial direction should require the same force component along a direction parallel to the ways. This motion should also be "chatter" or "jerk" free. When the scanning stage is translated in the free body mode, there shall be no rotation (oscillation) of the stage. The motion on the current prototype is not acceptable.

2.1.3. Note: It is essential that both of these motions remain orthogonal throughout their total ranges to within ± 0.00005 ft/in. (2' of arc)--a characteristic not exhibited by the prototype.

2.2. Microstereoscope Mounting and Translation Assembly - The microstereoscope translation slide must be firmly and securely attached to the main structual elements of the light table. Previously it was attached to a sheet metal section of the skin, thereby allowing the translation assembly and vertical post mount to "flex" relative to the light table. The slide assembly must be capable of being locked along any position of the slide. This lock must be so designed that it will not introduce tilt into the microstereoscope support assembly when it is applied, thereby reducing the degree of collimation between the microstereoscope support and the scanning stage, and should be positioned in a readily accessible location. When the lock is applied the microstereoscopic images shall remain in sharp focus even at the maximum magnification. The deflection of the translation slide (measured at any corner of that slide) when the lock is applied shall be no more than 0.0005 inch. The light table will be furnished with a [redacted] Focusing Stand in accordance with [redacted] drawing 53990739-100. When a force is applied parallel to the microstereoscope support rod at the point on the [redacted] Focusing Stand most extreme from that rod, a deflection of no more than .001 inch/lb of force will occur. The focusing assembly will be collimated in accordance with the above listed microstereoscopes' requirement to allow (1) scanning over the entire stage without noticeable focal shift, and (2) movement of the microstereoscope slide without noticeable focal shift. The Focusing Stand will be collimated to the Film Translation Stage to within 30" of arc. This means that the machined microstereoscope mounting surface of the Focusing Stand shall be collimated to the film stage within 30 seconds of arc between the two surfaces throughout the total travel of the Film Stage and the Microstereoscope Translation Assembly.

X1 X1 25X

2.3. The Light Source - At maximum intensity, the brightness of each of the two light sources shall be no less than 3700 ft lamberts. This intensity shall be continuously variable to a minimum brightness of 600 ft lamberts. These brightness values shall not decrease by more than 10% within the first 3000 hours of operation and by no more than 25% within the first 5000 hours. Under no circumstances will there be perceptible flicker of the light sources at any of the brightness settings.

2.4. System Vibration - The light table and microstereoscope support assembly must be constructed so that no visible vibration is introduced between the object (film) and image (microstereoscope eyepiece) planes as viewed at 100X.

2.5. Temperature - The maximum film plane temperature after ten hours of continuous operation at maximum light source intensity, with a fogged silver halide film of a density of 2.0 completely covering the illuminated area, will be no higher than 100°F when operated in an ambient condition of no less than 75°F. No other surface on the outside of the light table shall exceed 100°F under the same operating conditions.

2.6. The weight of the light table shall not increase by more than five pounds over that of the prototype. The size shall not exceed 22 inches wide by 22 inches deep by 6 inches high (without micorstereoscope mounting posts).

2.7. The X, Y handwheels shall be fabricated to be solid, with a small indentation drilled near the outside edge. This will facilitate easy turning with one finger.

2.8. The glass portion of the stage shall be made easily removable so that the lower portions can be cleaned. Spring clips or some other mechanical arrangement shall be used instead of the removable screws.

3. GENERAL

X1 All features and characteristics currently exhibited in the prototype light table built under [redacted] shall be maintained except as modified by this document.

3.1. General Warranty - Except as specified above, the light table will be warranted for a period of 90 days after final acceptance.

3.2. The production contract will call for the delivery of one fully acceptable unit prior to entering into a production run.

3.3. Instruction and maintenance manuals and a list of spare parts per instrument will be considered as a part of this contract. Three (3) copies each of an operator's manual and maintenance manual, with a list of replaceable parts, shall be provided for each TLSLT light table. These manuals shall be engineering type and shall contain appropriate schematic diagrams, illustrations, and instruction to satisfactorily operate and maintain the equipment at the operational level.

3.4. The methods and techniques of workmanship used in fabrication and assembly of parts, sub-assemblies, and assembly of the TLSLT light table, shall be consistent with accepted standards for high quality mechanical-electro-optical equipment. Mass production methods will be used where possible, provided operational reliability will not be impaired

3.5. The general warranty will include the implied warranties of merchantability for the ordinary purpose of employing the light table in the photo interpretation process and fitness for the particular purpose of utilizing the instrument with the above named optical instruments.

[redacted]

25X1

SPECIFICATION NO. ED-GG-1
2 October 1967
STEREOSCOPE LIGHT TABLE
WITH
MENSURATION SCANNING STAGE

S.I. 240,164 Rev. 1

25X1

Prepared [redacted]

STEREOSCOPE LIGHT TABLE WITH MENSURATION SCANNING STAGE

1. SCOPE.

This specification covers the general requirements for design and manufacture of the Stereoscope Light Table with Mensuration Scanning Stage, hereinafter referred to as the SLT.

2. REQUIREMENTS.

2.1 GENERAL

The SLT is to accommodate the [redacted] Zoom 70 with [redacted] 25X1
25X1 [redacted] Wide Span Rhomboid attachments, or [redacted] Zoom 240 25X1
Microstereoscope.

2.2 VIEWING SURFACE

The SLT shall have two (2) independently controlled 6" x 6" lighted viewing surfaces which can be used as one larger (6" x 12") viewing surface when light baffle is removed.

2.3 FILM STAGE TRANSLATION

2.3.1 Precise Motion

It shall have an X and Y mensuration scanning stage which shall precisely position film under the stereoscope reticle, with a mensuration range of ±1.50 inches (total travel 3.00 inches) in X and Y. Mensuration accuracy shall be ±0.0001 foot and 0.1% of distance travelled. Resettable digital readout, to a 4-digit number, shall be provided for both X and Y axes.

Placed for quick and easy reading, the mensuration readouts shall have five (5) graduations for each unit so as to provide interpolation to the nearest .00002'.

2.3.2 Free Body Motion

The scanning stage shall be capable of being disengaged from the mensuration mechanism for rapid transport when scanning through the stereoscope. The scanning stage shall maintain orthogonality of ±0.00005' per inch (2' of arc). A quick, but positive, mechanically stable disengaging mechanism shall be provided to disconnect the stage from the precise measuring screws. When the scanning stage is translated in the free body mode, there shall be no rotation (oscillation) of the stage.

2.4 MICROSTEREOSCOPE SLIDE

The SLT shall have a Microstereoscope Mounting and Translation Assembly firmly and securely attached to the main structural elements of the SLT. This slide assembly must be capable of being locked along any position of the slide, with minimum tilt introduced in the microstereoscope support assembly when locking. The maximum acceptable tilt shall be 0.0001", measured at the end of the slide. The lock shall be located in a readily accessible position.

The SLT shall be furnished with a [redacted] focusing stand, in accordance with their Drawing 53990739-X. The machined microstereoscope mounting surface of the focusing assembly shall be parallel to the film stage within ±0.001" throughout the 3" travel of the stage in X and in Y, and the 4" of microstereoscope slide travel. This represents a parallelism of better than 30" of arc between the two surfaces. 25X1

2.5 ILLUMINATION

At maximum intensity, the brightness of each of the two light sources shall be no less than 3,500 foot lamberts. These values shall not vary by more than 20% over the entire illuminated area. This intensity shall be continuously variable to a minimum brightness of 600 foot lamberts. These brightness values shall not decrease by more than 20% within the first 1000 hours of operation, and by no more than 50% within the first 4000 hours hours of operation. There shall be no disturbing flicker of the light sources at any of the brightness settings.

2.6 TEMPERATURE RISE

The maximum film plane temperature after 10 hours of continuous operation at maximum light source intensity, with a fogged silver halide film of a density of 2 completely covering the illuminated area, shall be no higher than 110°F when operated in an ambient condition of 75°F, ±5°F. No other surface on the outside of the SLT shall exceed 130°F under the same operating conditions.

2.7 SIZE AND WEIGHT

2.7.1 Size shall not exceed 22" wide x 22" deep x 6" high (without stereoscope posts).

2.7.2 The weight of SLT, without any stereoscope, shall be no more than 50 pounds.

2.8 CONTROLS

The following controls shall be supplied with each SLT:

2.8.1 ON-OFF and Intensity Control for each light source. The controls for the left and right light grids shall be located on the left and right side respectively.

2.8.2 Control Wheels for X-Y mensuration stages shall be conveniently located for ease of operation when looking through the microstereoscope and shall be fixed in their location.

2.9 POWER

120 VAC, 60 Hertz, Single Phase power source shall be used.

The SLT shall draw approximately 200 watts.

TECHNICAL SPECIFICATIONS FOR PRODUCTION UNITS OF A TWIN LIGHT SOURCE TABLE WITH MEASURING STAGE

1. INTENT - The purpose of this project is to fabricate a production version of the Twin Light Source Light Table with a Measuring Stage which will be utilized with the [redacted] Zoom 70 equipped with the [redacted] Wide Span Rhomboid Attachments or the [redacted] Zoom 240 Microstereoscope. All of the features of the light table must be commensurate with the performance characteristics of the above named instruments.

X1 25X1 25X1

2. MECHANICAL IMPLEMENTATION - The basic concept and general construction of the subject light table will be similar to that prototype instrument developed under US Government Contract [redacted] and generally as outlined in [redacted] Proposal No. SME-CG-58. The following major differences are to be noted:

25X1 X1

A. Stage Translation - The translation of the scanning stage will exhibit two characteristic types of motion; (1) a precise screw driven type and, (2) a free body type.

(1) Precise Motion - This motion, which is associated with the measuring function, shall be completely smooth and free from "chatter" or non-uniform drag. When viewing through the microstereoscope at any mangification up to 100X the image shall move in a smooth and uniform manner without perceivable "jumping" or "jerking." The smoothness of motion as exhibited on the microscope stage of a [redacted] Dynazoom Microscope or equivalent will be acceptable. Back lash in the screw motion must be reduced to an absolute minimum between the handwheels, the scanning stage, and the counters. There must be no "dead zone" in the handwheel rotation, i.e., screw motion.

X1

(2) Free Body Miton - A quick, but positive, mechanically stable disengaging mechanism will be provided to disconnect the stage from the precise measuring screws. This mechanism will allow the operator to lock the stage in the disengaged mode or allow him to simply

disengaged momentarily for one repositioning operation and upon release the mechanism will automatically lock the stage onto the screw drive mechanism--the engaging-disengaging mechanism on the present prototype is not acceptable. When the stage is in the free body mode the stage movement will be that attributed to a free body; that is, a constant force applied along any direction parallel to the plane of the glass stage plate will produce a free body motion of constant velocity diminished only by a uniform friction component. Motion along any vectorical direction should require the same force component al along a direction parallel to the ways. This motion should also be "chatter" or "jerk" free. The motion on the current prototype is not acceptable.

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B. Microstereoscope Mounting and Translation Assembly - The microstereoscope translation slide must be firmly and securely attached to the main structual elements of the light table. Previously it was attached to a sheet metal section of the skin, thereby allowing the translation assembly and vertical pole mount to "flex" relative to the light table. The slide assembly must be capable of being locked along any position of the slide. The lock must be so designed that it will not introduce tilt into the microstereoscope support assembly when it is applied thereby reducing the degree of collimation between the microstereoscope support and the scanning stage and should be positioned in readily accessable located. The light table will be furnished with a [redacted] Focusing Stand in accordance with their drawing 53990739-100. The focusing assembly will be collimated in accordance with the above listed microstereoscope's requirement to allow (1) scanning over the entire stage without noticeable focal shift and (2) movement of the microstereoscope slide without noticeable focal shift. 25X

C. The Light Source - At maximum intensity, the brightness of each of the two light sources shall be no less than 4000 ft. lamberts. This intensity shall be continuously variable to a minimum brightness of 600 ft. lamberts. These brightness values shall not decrease by more than 90% within the first 5000 hours of operation and by no more than 75% within the first 8000 hours. Under no circumstances will there be

perceptible flicker of the light sources at any of the brightness settings.

D. System Vibration - The light table and microstereoscope support assembly must be constructed so that no visible vibration is introduced between the object (film) and image (microstereoscope eyepiece) planes as viewed at 100X.

E. Temperature - The maximum film palne temperature after ten hours of continuous operation at maximum light source intensity, with a fogged silver halide film of a density of 2.0 completely covering the illuminated area, will be no higher than 110°F when operated in an ambient condition of no less than 75°F. No other surface on the outside of the light table shall exceed 130°F under the same operating conditions.

F. The weight of the light table shall not increase by more than five pounds over that of the prototype.

3. All other features and characteristics currently exhibited in the prototype light table built under [redacted] shall be maintained except as modified by this document. 25X

4. The production contract will call for the delivery of one fully acceptable unit prior to entering into a production run.

5. Instruction and maintenance manuals and a list of spare parts per instrument will be considered as a part of this contract.

7 December 1967

X1 [redacted] TLSLT PRODUCTION #02368

X1 1. [redacted] agreed to add handles to the unit.

2. The backlash (dead zone) specification will be reduced from .00001 ft. to .00003 ft. The prototype has an X axis backlash of .00006 ft. and the Y axis has less than .00002 ft. This specification will be tested by matching a crosshair in the eyepiece with a point on the stage and recording the counter reading. The handwheel will then be rotated until the crosshair and point are no longer registered. The counter will be read again and the difference between the intial and final readings must be within .00003 ft.

X1 3. [redacted] will probably increase the skin temperature specification back to the original 130°F level.

[redacted] 25X

5 December 1967

DEFLECTION OF LIGHT TABLE MICROSCOPE RING

FORCE (LBS)	Deflection (Inches)	
	Modified LB 56-2	Fairchild TLSLT
1	.0035	.011
2	.007	.022
3	.010	.033
4	.014	.045
5	.017	.055

Cross-section of post on modified LB-56-2 equals 1.5 sq. in. and on TLSLT equals 1.22 sq. in.

From this analysis the specification on production version of the [redacted] 25X TLSLT will be reduced from .001"/lb to .004"/lb.

[redacted] 25X

 02368

30 November 1967

X1 DISCUSSION ON [redacted] QUOTATION FOR TLSLT

1. The specification for the deflection of the focusing stand was reduced from .001"/lb to .004"/lb.

2. The weight limit will be increased to 10 lbs above the prototype light table.

3. The first two complete sentences on Page 2 of the specification will be modified to reflect the force ($\approx$ 1/8 lb) required to transport the stage in the free body mode and a tolerance of approximately $\pm$ 10° in the parallelism of the motion with respect to the direction of applied force.